



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.                 | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------------------|------------------|
| 10/789,163  | 02/26/2004  | Kazuo Hokkirigawa    | 051319/0166                         | 8986             |
| 29619   | 7590        | 08/17/2006           |                                     |                  |
| SCHULTE ROTH & ZABEL LLP<br>ATTN: JOEL E. LUTZKER<br>919 THIRD AVENUE<br>NEW YORK, NY 10022 |             |                      |                                     |                  |
|   |             |                      | EXAMINER<br>KRAUSE, JUSTIN MITCHELL |                  |
|   |             |                      | ART UNIT<br>3682                    | PAPER NUMBER     |

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/789,163

Applicant(s)

HOKKIRIGAWA ET AL.

Examiner

Justin Krause

Art Unit

3682

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "low friction" which is indefinite because the term is relative and has no comparative basis. It is unclear how much friction is possible and still be considered "low".

Claim 1 recites the limitation "wherein the shaft and the sleeve are submersed in water." Which renders the scope of the claim indefinite because it is not clear if it is applicants intent to claim the water, or as stated in the preamble, a bearing intended to be used in water.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1 and 4-10, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Jex (US Patent 5,273,819) in view of Hokkirigawa et al (US Patent 6,395,677).

Jex discloses a material composition for use in sleeve bearings (Col 14, lines 27-36), sleeve bearings by definition having a shaft and a sleeve wherein the material composition contains a combination of a filler, resin and fibers wherein the bearing can be used in a marine environment (Col 12, lines 32-34).

Jex does not disclose the use of one of RBC or CRBC as a filler material.

Hokkirigawa discloses a synthetic resin composition obtained by uniformly blending a rice bran powder that undergoes a carbonizing process (RBC) with a resin (Abstract) for the purposes of better hot oil resistance, retaining oil and grease for a long period of time, providing a long service life, and utilization of biomass resources (Col 1, lines 58-64) and discloses the use of fiber reinforced resins in bearings is known within the art (Col 1, lines 20-27).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the bearing material of Jex and incorporate the RBC filler of Hokkirigawa for the purposes of providing a bearing with better hot oil resistance, retaining oil and grease for a long period of time, providing a long service life, and utilization of biomass resources.

Regarding claim 4, Hokkirigawa discloses the ratio of powder by weight of RBC to resin as 50-90:50-10 (col 2, line 51) which is within the claimed range of 10-70:90-30.

Regarding claim 5, Hokkirigawa specifically discloses both phthalate resins and polyimide resins as useable resins and further states that any thermosetting resin may

be used (col 2, lines 37-43), as well as Nylon 66 being known as a useable material in bearings (Col 1, line 20).

Regarding claim 6 and 7, Hokkirigawa discloses the particle diameter of the powder of RBC to be less than 300  $\mu\text{m}$ , and more specifically within the range of 50-250  $\mu\text{m}$  (Col 3, lines 44-47).

Regarding claim 8, all fibers are either organic or inorganic.

Regarding claim 9 and 10, Hokkirigawa discloses use of glass fibers in bearings as being known in the art (Col 1, line 20)

1. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jex and Hokkirigawa as applied to claim 1 above, and further in view of Mori et al (US Patent 5,697,709).

Jex and Hokkirigawa disclose all of the claimed subject matter as described above but do not disclose spiral grooves on the inner face of the sleeve.

Mori teaches a sleeve bearing with grooves in one of the inner surface of the sleeve or the outer surface of the shaft for generating dynamic pressure (claim 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the bearing of Jex and Hokkirigawa and add spiral grooves to the inner face of the sleeve or outer surface of the shaft, the motivation would have been to generate dynamic pressure in the bearing gap.

2. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jex and Hokkirigawa as applied to claim 1 above, and further in view of Jinno et al (US Patent 4,737,539).

Jex and Hokkirigawa disclose all the claimed subject matter as described above. Jex and Hokkirigawa do not disclose a fiber content by weight to be 1-30% of the entire synthetic resin composition.

Jinno teaches a resin material for bearings with a fiber content by weight of .05-25% of the synthetic resin composition for the purposes of permitting adequate improvement in the sliding characteristics of the material and preventing difficulty in blending the fibers into the resin (Col 6, lines 37-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Jex and Hokkirigawa and use a fiber content between 1 and 30% by weight of the entire synthetic resin composition, the motivation being permitting adequate improvement in the sliding characteristics of the material and preventing difficulty in blending the fibers into the resin.

3. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jex and Hokkirigawa as applied to claim 1 above, and further in view of Hokkirigawa et al (US 2002/0114548, herein referred to as -Hokkirigawa '4548- to distinguish between the references).

Jex and Hokkirigawa disclose all of the claimed subject matter as described above but do not disclose a shaft being made of the synthetic resin composition.

Hokkirigawa '4548 teaches use of a synthetic resin composition in a sleeve bearing shaft with a composition by mass of powder to resin to be 50-90:50-10 and that so long as one component of either the sleeve or shaft is made of an RBC resin composition and the other of the sleeve or shaft is made from a rust resistant metal, the bearing will function the same (paragraph 0009). Therefore it would have been obvious to one of ordinary skill in the art to make the shaft out of a synthetic resin composition having a ratio of RBC to resin of 30-90:70-10 for the purposes of providing a bearing with better hot oil resistance, retaining oil and grease for a long period of time, providing a long service life, and utilization of biomass resources.

4. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Jex as modified by Hokkirigawa as applied to claim 1 above, and further in view of Clark (US Patent 4,251,192).

Jex and Hokkirigawa disclose all of the claimed subject matter as described above, but do not disclose the shaft being a rust resistant steel.

Clark discloses a fluid pump with a shaft (114) being made from stainless (rust resistant) steel to reduce chemical attack by the liquid being pumped (Col 3, lines 35-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the bearing shaft out of stainless steel as taught by Clark, the motivation would have been to reduce chemical attack by the liquid being pumped.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

***Terminal Disclaimer***

6. The terminal disclaimer filed on June 8, 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of the patent resulting from application 10/377,851 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Krause whose telephone number is 571-272-3012. The examiner can normally be reached on Monday - Friday, 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMK  
8/15/06



RICHARD RIDLEY  
SUPERVISORY PATENT EXAMINER